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(54) **WEARABLE VOICE-INDUCED VIBRATION
OR SILENT GESTURE SENSOR**

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ABSTRACT

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Disclosed herein are wearable devices, their configurations,
and methods of operation that use self-mixing interferom-
etry signals of a self-mixing interferometry sensor to rec-
ognize user inputs. The user inputs may include voiced
commands or silent gesture commands. The devices may be
wearable on the user's head, with the self-mixing interfer-
ometry sensor configured to direct a beam of light toward a
location on the user's head. Skin deformations or vibrations
at the location may be caused by the user's speech or the
user's silent gestures and recognized using the self-mixing
interferometry signal. The self-mixing interferometry sig-
nals may be used for bioauthentication and/or audio condi-
tioning of received sound or voice inputs to a microphone.

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